PABLO D. PUSIOL

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ACADEMICS

M. Sc. in Computer Science (2012 - 2014). (2 yrs. program degree as Licenciado)
- Affiliation: FaMAF - UNC (School of Mathematics, Astronomy and Physics - National University of Cordoba) as Licenciado.
- Final work: (March 2014) Deep Learning & Activity Recognition in sports. Based on tennis broadcasts, We applied deep learning to get scene semantics.Reference (Spanish). **Keywords:** Machine Learning, Deep Learning, Convolutional Neural Networks. *Advisors:* Guido T. Pusiol, PhD (Stanford, US), Daniel E. Fridlender, PhD (FaMAF - UNC, AR).
- *Average 7.77 / 10.00*

B. Sc. in Computer Science (2009 - 2011). (3 yrs. program bachelor as Analista).
- Affiliation: FaMAF - UNC (School of Mathematics, Astronomy and Physics - National University of Cordoba)
- *Average 7.77 / 10.00*

PROFESSIONAL EXPERIENCE

Spinlock SRL - Cordoba AR (May 2017 - Present)
R&D Product Management Lead

Developing Computer Vision algorithms using LiDAR and RGB-D sensors for detecting morphological features of crops running through Spinlock's inline NMR unit, with signal capture times $< 100ms$.

Developed a novel method for auto-calibration of NMR signals for oil flow and cut sensors using Deep Learning style-transfer algorithms. Oral presentation at 3 Jornadas de INTEGRANDO EL MUNDO FSICO Y EL DIGITAL 2019 INNOVACIÓN TECNOLGICA - (IAPG) Instituto Argentino del Petroleo y Gas - Auditorio Techint Buenos Aires, Argentina.

· Creation of a ML/AI Spinoff (2022) (https://datarock.ai): Implementing several state-of-the-art algorithms and models for web and mobile. Expected to be released in Flutter/Dart for both iOS and Android, to be used in Argentina's largest Gym Franchise (about 100.000 gym reservations a day). Request TestFlight access for Facial ID demo App and/or source-code (Swift only).

· Developed an in-line NMR Spectrometer for non-stop measurement of nutritional facts in a food factory. R&D project requested by one of the world's leaders snack manufacturers, deployed in Houston TX. A second prototype was requested by the client to be deployed also in the US. Link to media (Spanish).

Activity Recognition Inc. - Mountain View, CA (January 2015 - April 2017)
Machine Learning Engineer - Cofounder

· Design, development, deployment of a web-based engine for healthcare service recommendations and prognosis on elders. This engine is first-of-its-class, and being deployed in several Japanese cities in association with one of the largest Japanese health services provider (http://activityrecognition.com).

- Design, development, deployment of an end-to-end solution for elders monitoring and alarm triggering at home and nursing-care facilities using deep learning algorithms in Far Infrared sensors feed. App Thermix available at the App Store (Jun. 2021), data at http://thermset.activityrecognition.com. This project won Best overall and best software at FLIR Bring the Heat San Francisco 2015 (Link to media).

- Design, development and deployment of an automatic video editing social network using Deep Learning. App is free in the App Store under VDO. **Technologies:** Objective-C mainly, some Python/Django.

- Design, development and deployment of a mobile photo app for automatic selection of best pictures using Deep Learning. App is free in the App Store under Bestie. Using quantization, Bestie was one of the first apps to run locally (iPhone 4) Convolutional Neural Network forward passes of large models (Comparable with AlexNet). **Technologies:** Objective-C mainly, Libccv and C.

INRIA - Nice, France (April 2014 - October 2014)
Research Team STARS

- Detecting people in RGB-D data for long term people tracking and events detection using Deep Learning, in the French Institute for Computer Science Research (INRIA). Contribuing to Dem@care (EU joint project for healthcare long term analysis) and Toyota Research Japan.

OPTIONAL SUBJECTS

INTRODUCTION TO REMOTE SENSING

- *Average 10.0/10.0* - M.Sc. Subject - FaMAF/CONAE - 2013
- Subject Project : AN APPROACH TO AN AUTOMATIC METHOD FOR THE EXTRACTION OF ROAD NETWORKS IN HIGH RESOLUTION REMOTE SENSING IMAGES. Studied different techniques for the development of an automatic road networks extraction method, including classification in different stages using fuzzy logic, neural networks and classic statistics. A vectorization algorithm of the raster image was proposed as well.

STATISTICAL ANALYSIS OF SATELITE IMAGES (IMAGE PROCESSING)

- *Average 10.0/10.0* - M.Sc. Subject - FaMAF/CONAE - 2012
- Subject Project : PROPOSE AND IMPLEMENT NOVEL EDGE DETECTION ALGORITHMS IN IMPULSIVE NOISE AFFECTED IMAGES. Studied popular edge detection algorithms effects in multichannel images affected with impulsive noise. Proposed and implemented new algorithms to work with images with this noise. (C#, ENVI/IDL, Matlab)

NUCLEAR MAGNETIC RESONANCE (NMR) PRINCIPLES - Spinlock S.R.L. - 2012

- Lectured at Spinlock facilities. Themes: RF Basics, Excitation, Relaxation, Pulse Sequences, FID, Echos, post Processing Algorithms, Coils, RF Transmitter, RF Receiver, Fixed Magnets vs Electromagnets, A/D - D/A Conversions, etc.

GIVEN LECTURES

Scene Understanding using Convolutional Neural Networks

- National University of Cordoba (UNC) - FaMAF 2014

Deep Learning in Computer Vision

- INRIA Sophia-Antipolis - France 2014

An approach to an automatic method for road networks extraction

· National University of Cordoba (UNC) - FaMAF 2013

Formal properties verification in C/C++ code

· National University of Cordoba (UNC) - FaMAF 2013, attended majority of CS Department of the school.

State of the art in Digital elevation models

· CONAE (National Argentine Spatial Agency) - 2013, Dr. Marcelo Scavuzzo, Dr. Oscar Bustos.

Edge detection algorithms in Impulsive-noise affected multi-channel images - P. Pusiol

· National University of Cordoba (UNC) - FaMAF 2012, Dr. Oscar Bustos.

ATTENDED COURSES

Acquisition and processing of SAR (Synthetic Aperture Radar) Images

· CONAE (National Argentine Spatial Agency) - 2013.

Applications of Cellular Automatons in Remote Sensing

· FaMAF. Cordoba, Argentina - 2013

Good coding practices

· FaMAF / Motorola Solutions, Inc. Cordoba, Argentina - 2011.

Copyright Property and Software Licenses

· Catholic University (UCC), Cordoba, Argentina - 2012.

TECHNICAL SKILLS

Programming: C# .NET, Python (Tensorflow) (2017 - today). Objective-C (iOS), Python (Django)(2015 - 2017).

Project management & ML: DVC (Data Version Control), Jupyerlab.

ONLINE COURSES

Deep Learning Specialization Coursera - deeplearning.ai
by Andrew Ng

· The Deep Learning Specialization is designed to prepare learners to participate in the development of cutting-edge AI technology, and to understand the capability, the challenges, and the consequences of the rise of deep learning. Through five interconnected courses, learners develop a profound knowledge of the hottest AI algorithms, mastering deep learning from its foundations (neural networks) to its industry applications (Computer Vision, Natural Language Processing, Speech Recognition, etc.). Link to Certificate.

Machine Learning Coursera - Stanford University
by Andrew Ng

· This course is about 10 weeks long, and it covers different supervised and unsupervised learning algorithms, from the mathematical foundations to matlab implementations of learning and application of them. **Keywords:** Linear Regression, Logistic Regression, Neural Networks, Clustering, SVM .

Introduction to Recommender Systems Coursera - University of Minnesota
by Joseph A Konstan, Michael D Ekstrand

· This course is fourteen weeks long, and it is structured into eight modules. **Keywords:** Non-personalized recommendations, Content-Based-Recommendations, TFIDF, Vector Based Models